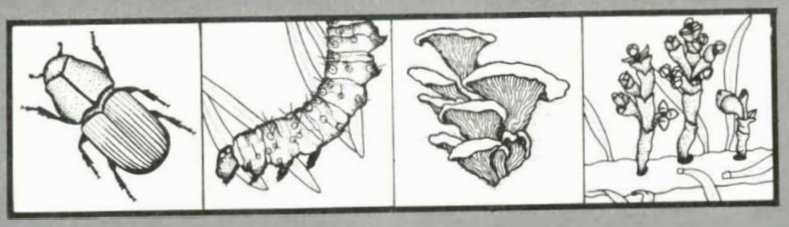
Forest Pest Management



Report No.82-25

3450
November, 1982

EVALUATION OF A DWARF MISTLETOE CONTROL PROJECT ON THE SWAN LAKE RANGER DISTRICT, FLATHEAD NATIONAL FOREST

By

Oscar J. Dooling, Plant Pathologist

ABSTRACT

Residual Douglas-fir is infested by dwarf mistletoe. These infested residuals pose a threat to present and planned regeneration. Felling or girdling these residuals will reduce dwarf mistletoe intensity and increase future volume yields. Present net worth of the project is $185 per acre. Benefit/cost ratio is 4.94/1. Control is recommended.

INTRODUCTION

The Swan Lake Ranger District has proposed a 2-year dwarf mistletoe control project on the Mount Creek unit: 321 acres in FY 1983, and 302 acres in FY 1984.

Barry Bollenbacher and Steve Dagger, Swan Lake RD, and I evaluated the area on July 12.

TECHNICAL INFORMATION

Causal agent.--Douglas-fir dwarf mistletoe, Arceuthobium douglasii.

Host.--Douglas-fir, Pseudotsuga menziesii.

Type of damage.--Reduction of tree vigor, height, and diameter growth, and some mortality. My estimate for average volume loss in infested Douglas-fir is about 20 cubic feet per acre per year. 1/

1/ Dooling, O. J., and R. G. Eder. 1981. An assessment of dwarf mistletoes in Montana. USDA Forest Service, Northern Region, Forest Pest Management Report 81-12.

United States Department of Agriculture | Forest Service | Northern Region | State & Private Forestry | P.O. Box 7669 Missoula, Montana 59807

This does not include losses to other pathogens and insects in trees made vulnerable by dwarf mistletoe.

STAND DESCRIPTION

The Mount Creek Sale was originally scheduled as a 680-acre clearcut, but modifications because of environmental constraints resulted in leaving many overstory trees. The overstory consists of both scattered and clumpy patches of Douglas-fir, lodgepole pine, and western larch. Douglas-fir is the only species affected by dwarf mistletoe. Most of the Douglas-fir regeneration is dwarf mistletoe free, but is threatened by the infested overstory. Primary management objectives are timber production in the high end of the unit and big game winter range in the low end.

MANAGEMENT ALTERNATIVES

1. Defer treatment.--Potential yields of Douglas-fir would be about 50 percent lower than in alternative 2 because dwarf mistletoe infestation would become worse. Lodgepole pine and western larch yields would probably be about the same. This alternative has the advantage of requiring the least investment.

2. Fell or girdle dwarf mistletoe-infested Douglas-fir overstory.--This would maximize yields and largely eliminate dwarf mistletoe from the Douglas-fir component.

3. Manage the unit for species other than Douglas-fir.--This is biologically sound, but potential yields would be lower than in alternative 2. Nonsusceptible species are also not as silviculturally desirable as susceptible ones.

PREFERRED ALTERNATIVE

Preferred treatment is to fell or girdle all dwarf mistletoe-infested Douglas-fir.

ECONOMIC ANALYSIS

Economic analysis of the control project is based on the following data:

Control costs	$47/acre
Years to product	
Thinning	50
Harvest	90
Yield predictions	
No treatment	15 MBF/acre
Treatment	
Thinning, age 60	3 MBF/acre
Harvest, age 100	19 MBF/acre
Current stumpage	$127/MBF
Discount rate	4 percent

Year	Volume without treatment (MBF/acre)	Volume with treatment (MBF/acre)	Benefit of treatment (MBF/acre)	Benefit value at harvest 1/ ($/acre)	Present value of benefit 2/ ($/acre)	Project cost ($/acre)
0 Age 10	0	0	0	0	0	47
50 Age 60	0	3	3	1,026	144	-
90 Age 100	15	19	4	3,020	88	-
	15	22	7	$4,046	$232	$47

1/ Current stumpage of $127/MBF increased at 2 percent compound interest.

2/ Harvest value discounted to present at 4 percent.

Present net worth is the difference between present value of benefits and project cost: $185/acre. The benefit/cost ratio is 4.94/1. Increasing stumpage values over time makes the project economically viable.

DISCUSSION

Recovery of volume losses through dwarf mistletoe control could generate additional employment in the forest products industry and result in what economists call "value added." While value added cannot be used in an economic analysis, it is substantial enough to be considered when determining overall benefits. Each million board feet of timber cut creates 10.56 person years of employment, 2/ paying an average of $16,784 per person per year. 3/ For the proposed control project, this translates into the generation of 0.03 and 0.04 years of employment per acre in 50 and 90 years, respectively. The increased employment would add $1,175 to the economy for each acre in the treatment area.

RECOMMENDATIONS

Reduction of dwarf mistletoe impact through silvicultural practices is both biologically and economically sound. I recommend the use of insect and disease funds for the project.

2/ Personal communication; Howard McDowell, Inland Forest Resource Council, Missoula, Montana (September 1981).

3/ Personal communication; Paul Polzin, Bureau of Business and Economics Research, University of Montana, Missoula, Montana (September 1981).

3537

Because control will be by felling or girdling scattered cull trees from areas already essentially clearcut, there will be no additional adverse impact on other resources. This project is neither major nor controversial, and does not need an environmental analysis.